

IN THE CLAIMS:

1. (Previously Presented) A wireless base station that wirelessly communicates with a plurality of mobile stations via an antenna by using space division multiplexing (SDM), each mobile station sending communication data containing an identifier (ID) to the wireless base station, comprising:

association information storing means for storing association information that associates each of the plurality of mobile stations with a different ID;

receiving means for receiving data into which communication data sent from the plurality of mobile stations is space-division multiplexed; and

extracting means for extracting, from the received data, communication data sent from the mobile station, the extraction being performed by (i) specifying an ID associated with each mobile station by referring to the association information, (ii) defining a reference signal containing the specified ID, (iii) obtaining, from first signals that have been sequentially received via the antenna by forming a directivity pattern, a second signal estimated to be related to the communication data, (iv) sequentially performing a calculation based on the second signal and the reference signal, (v) sequentially adjusting the directivity pattern by reflecting a result of the calculation, and (vi) obtaining data based on the second signal.

2. (Original) The wireless base station of Claim 1,

wherein the association information includes a plurality of IDs and state information that shows the plurality of mobile stations as being associated with the plurality of IDs,

wherein the wireless base station further comprises:

request receiving means for receiving a request for assignment of a channel from a mobile station out of the plurality of mobile stations; and

assigning means for (a) specifying an ID for the requesting mobile station when the request has been received, wherein the specified ID differs from an ID associated with another mobile station, with which the wireless base station currently communicates using the SDM, (b) updating the state information by associating the specified ID with the requesting mobile station, and (c) sending information to the requesting mobile station, wherein the sent information shows the specified ID and a channel assigned to the mobile station.

3. (Original) The wireless base station of Claim 1, further comprising

association deleting means for deleting, when a communication with a mobile station is completed, an association between the mobile station and an associated ID from the association information.

4. (Original) The wireless base station of Claim 1, further comprising:

ID receiving means for receiving an ID from a mobile station out of the plurality of mobile stations; and

updating means for updating the association information by associating the received ID with the mobile station that sent the ID when the ID has been received.

5. (Original) The wireless base station of Claim 1, further comprising:
ID receiving means for receiving an ID from the mobile station out of the plurality of the mobile stations; and

sending/updating means for (a) referring to the association information when the ID has been received, (b) notifying the mobile station that an ID differing from the received ID should be sent if the association information associates the received ID with another mobile station, and (c) updating the association information by associating the received ID with the mobile station that sent the ID if the association information does not associate the received ID with any mobile station.

6. (Original) The wireless base station of Claim 1,
wherein when the receiving means has received the data, the extracting means also (a) obtains a plurality of first signals from the received data, (b) obtains a second signal estimated to have been sent from each of the plurality of mobile stations, using the plurality of obtained first signals and a plurality of weight vectors that are vector factors, (c) specifies an ID associated with each mobile station by referring to the association information, (d) defines a reference signal containing the specified ID, (e) compares a component of the defined reference signal with a component of the obtained second signal to detect a difference between the two components, each component corresponding to a same predetermined period, (f) adjusts the second

signal by adjusting each weight vector so as to minimize the difference, and (g) regards the adjusted second signal as communication data sent from the mobile station, thereby extracting the communication data.

Claim 7 (Canceled)
